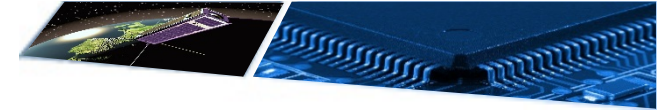# Space Research Group (SRG-UAH)

Dr. Pablo Parra
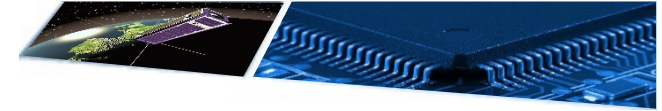
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Space Research Group

The Space Research Group of the University of Alcala (SRG-UAH) started its history back in 1967. It has two well linked branches: the scientific and the technological. We are now 34 people working in our main research areas, which are:

- Solar Physics
- Flight electronics design
- Flight software development
- Validation and testing tools
- Control systems

Technological working areas
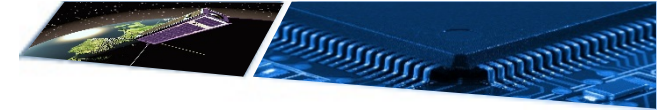
- Scientific instruments on board spacecraft

- Hardware: space processors, FPGAs, MMUs, C&DH, etc.

- IP-Cores development

- Hardware/Software co-design (VHDL, SystemC)

- High reliability software development (Ada, C/C++, Java)

- Embedded systems

- Real-time operating systems

- Software development tools (MICOBS, EDROOM, HRT-HOOD)

- Component-based software development

Main reference projects
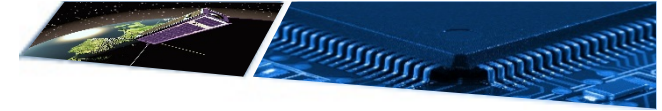
- **SOlar and Heliospheric Observatory (SOHO)**

  - CDPU of the CEPAC instrument

- **INTA's Nanosat and Microsat Programmes**

  - NS-01 & NS-1B On-board software development

  - MS Flight software and OBDH electronics (TSC695 Processor)

  - MS RTU and MMU based on LEON3 processor

  - MS CAN Bus and SpaceWire data interfaces

- **Solar Orbiter's Energetic Particle Detector (EPD)**

  - Instrument Control Unit

  - Flight Software

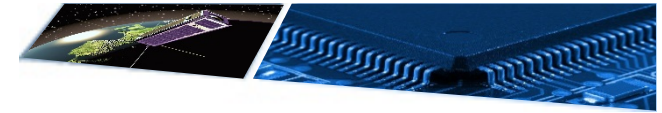 - EGSE

  - Intra-harness

  - EPD Project Office

- **Euclid's Near Infrared Spectrometer and Photometer (NISP)**

  - Boot software

  - CDPU

- **CALMA Neutron Monitor**

- **MELIBEA Solar Radio Spectrometer, integrated into the e-Callisto network**

- High-performance multiprocessor simulators with fault-injection capabilities

- Development of a fault-tolerant RISC-V processor architecture

- Hypervisors and hardware-assisted virtualization extensions for on-board satellite systems

- **Component-based model-driven software engineering for on-board software development**

- **Model-driven requirements engineering**